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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/506,311

Applicant(s)

KONDO ET AL.

Examiner

GANDHI THIRUGANAM

Art Unit

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 04/07/2008
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Remarks

The response received on 07 April 2008 has been placed in the file and was considered by the examiner. An action on the merits follows.

Applicant has amended claims 17. No claims have been canceled. Claims 1-17 are pending.

Examiner withdraws the objection to the spelling of the word "certificating". The objection to the verbiage of the title stands.

Examiner withdraws the USC 101 rejection of claim 17.

The USC 112 rejection stands. See Response to Arguments.

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Personal Authentication Method for Certifying Individual Iris.

The title as written does not clearly indicate the invention, nor does it make sense to the examiner.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

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art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claim 17** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 17 states a "computer readable medium", but the disclosure does not define a computer-readable medium. The specification does disclose "a memory which serves as a recording medium" in ¶ [0187] of the PG Publication.

Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The term "thinning" is only mentioned in ¶ [0059]. No clear meaning is apparent for this term.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 7, 8, 11-13 and 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Oda (Patent #6,542,624), hereafter referred to as Oda.

Regarding **claim 1**, Oda discloses a personal authentication method using iris images, comprising a registration process and an authentication process, the **registration process** including the steps of:

acquiring an iris image from a registrant; (*Oda, Col. 4 Lines 9-11*)

obtaining feature data and a pupil opening degree index from the acquired iris image; (*Oda, Col. 4 Lines 11-13, the system verifies whether or not the photographed image of the eye exhibits biogenic responses, Where typical biogenic responses are defined in Col. 3 Lines 54-62. The "pupil opening index" references "the contraction of pupil diameter"*) and

performing data registration for the registrant in an iris database using the obtained feature data and pupil opening degree index, and (*Oda, Col 4, Lines 14-24, where the image of an eye exhibiting biogenic characteristics is inputted based on the life check code.*)

the **authentication process** including the steps of:

acquiring an iris image from a person to be authenticated; (*Oda, Col. 4 Lines 9-11*)

obtaining feature data and a pupil opening degree index from the acquired iris image; (*Oda, Col. 4 Lines 11-13, the system verifies whether or not the photographed image of the eye exhibits biogenic responses, Where typical biogenic responses are*

defined in Col. 3 Lines 54-62. The "pupil opening index" references "the contraction of pupil diameter")

obtaining feature data to be collated by referring to data registered for a registrant in the iris database with the pupil opening degree index obtained in the authentication process; and (Oda, Col. 3 Lines 8-12, "iris code stored in the database")

comparing the feature data to be collated with the feature data obtained in the authentication process to determine whether or not the person to be authenticated is identical to the registrant. (Oda, Col. 3 Lines 8-12, "identifies individuals by matching an iris code ...")

It should be noted that in registering an object into a database, a unique generated key(s) and the object are stored into the database. The process of retrieving an object from a database requires a key(s) to be sent to the database and the database returns the object if the key(s) is found in the database system. The generation of the key should be consistent for proper working of the database. The steps of acquiring the iris image, obtaining feature data and pupil opening degree index are equivalent to the generation of a unique key(s). The process of storing, retrieving and comparing the keys is part of the basic operation of a database.

Regarding **claim 2**, Oda discloses the personal authentication method of claim 1, wherein:

the registration process includes the step of registering the feature data together with the pupil opening degree index in the iris database in conjunction with the

registrant; and (*Oda, Col. 3 Lines 8-12, the database for storing iris codes of individuals and identifies individuals*)

the authentication process includes the step of specifying the feature data to be collated from feature data registered in the iris database in conjunction with a registrant by comparing the pupil opening degree index obtained in the authentication process with the pupil opening degree index registered together with the feature data. (*Oda, Col. 3 Lines 8-12, "identifies individuals by matching an iris code ...", where the iris code can be one of four codes based on lighting conditions (Col. 12 Lines 9-20)*)

Regarding **claim 3**, Oda discloses the personal authentication method of claim 2, wherein the registration process includes the step of at least registering three pieces of feature data of the registrant obtained from iris images in a pupil-contracted state, in a normal state, and in a pupil-dilated state, respectively. (*Oda, Col. 3 Lines 54-62, "Contraction of pupil diameter"*)

Regarding **claim 4**, Oda discloses the personal authentication method of claim 2, wherein the registration process includes the steps of:

acquiring a plurality of iris images having different pupil opening degrees from the registrant; (*Oda, Col. 5 Lines 17- Col. 6 Line 43 discloses photographing multiple images based on various light sources. The light sources intensity controls the pupil diameter*)

obtaining feature data from each of the plurality of acquired iris images; (*Oda, Col. 5 Lines 17- Col. 6 Line 43, the pupil diameter*) and

collating the plurality of pieces of feature data with each other to select feature data to be registered in the iris database from the plurality of pieces of feature data.

(Oda, Col. 12 Lines 9-20, the first to fourth codes generated)

Regarding **claim 5**, Oda discloses the personal authentication method of claim 2, wherein the authentication process is aborted when feature data having a pupil opening degree index which is close to the pupil opening degree index obtained in the authentication process by a predetermined difference is not registered for the registrant.

(Oda, Col. 8 Lines 64-67, if there is no matching the processing is halted)

Regarding **claim 7**, Oda discloses the personal authentication method of claim 1, wherein the registration process includes the steps of:

acquiring a plurality of iris images having different pupil opening, degrees from the registrant; *(Oda, Col. 5 Lines 17- Col. 6 Line 43 discloses photographing multiple images based on various light sources. The light sources intensity controls the pupil diameter)*

obtaining a relational expression between feature data and a pupil opening degree index based on a plurality of pieces of feature data and pupil opening degree indices obtained from the plurality of acquired iris images; *(Oda, Col. 12 Lines 9-20, the first to fourth codes generated based on lighting sources)* and

registering parameters for expressing the relational expression in the iris database in conjunction with the registrant, *(Col 4, Lines 14-24, where the image of an eye exhibiting biogenic characteristics is inputted based on the life check code.)* and

the authentication process includes the step of obtaining a relational expression from parameters registered in the iris database in conjunction with a registrant and assigning the pupil opening degree index obtained in the authentication process to the relational expression to obtain the feature data to be collated. (*Oda, Col. 3 Lines 8-12, "iris code stored in the database" and "identifies individuals by matching", where matching is done by comparing iris code. In order to retrieve information from a database a relational expression must be used.*)

Regarding **claim 8** as best understood, Oda discloses the personal authentication method of claim 7, wherein:

the registration process includes the step of thinning the parameters before registration; (*Oda, Col. 1 Lines 43-58, the iris code generating device*) and

the authentication process includes the step of restoring the thinned parameters by interpolation. (*Oda, Col. 1 Lines 43-58, the iris code stored on the database*)

Examiner is unsure of what applicant intends by "thinning", see rejection/objection above, examiner assumes applicant means creating a code from the eye feature data

Regarding **claim 11**, Oda discloses a personal authentication method using iris images, comprising:

the first step of acquiring an iris image from a person to be authenticated; (*Oda, Col. 4 Lines 9-11*)

the second step of obtaining feature data and a pupil opening degree index from the iris image obtained at the first step; (*Oda, Col. 4 Lines 11-13, the system verifies*

whether or not the photographed image of the eye exhibits biogenic responses, Where typical biogenic responses are defined in Col. 3 Lines 54-62. The "pupil opening index" references "the contraction of pupil diameter")

the third step of obtaining feature data to be collated by referring to data registered for a registrant in an iris database in which data registration has been done using pupil opening degree indices with the pupil opening degree index obtained at the second step; (*Oda, Col. 3 Lines 8-12, "iris code stored in the database"*) and

the fourth step of comparing the feature data to be collated which is obtained at the third step with the feature data obtained at the second step to determine whether or not the person to be authenticated is identical to the registrant. (*Oda, Col. 3 Lines 8-12, "identifies individuals by matching an iris code ..."*)

Regarding **claim 12**, Oda discloses the personal authentication method of claim 11, wherein:

the iris database stores at least one piece of feature data for each registrant together with a pupil opening degree index; (*Oda, Col. 3 Lines 8-12, the database for storing iris codes of individuals and identifies individuals*) and

at the third step, a pupil opening degree index registered together with the feature data, which is selected from the at least one piece of feature data registered in the iris database in conjunction with the registrant, is compared with the pupil opening degree index obtained at the second step to specify the feature data to be collated. (*Oda, Col. 3 Lines 8-12, "identifies individuals by matching an iris code ...", where the iris code can be one of four codes based on lighting conditions (Col. 12 Lines 9-20))*

Regarding **claim 13**, Oda discloses the personal authentication method of claim 11, wherein:

the iris database stores parameters which express a relational expression between feature data and a pupil opening degree index for each registrant; (*Oda, Col. 12 Lines 9-20, the first to fourth codes generated based on lighting sources*) and

at the third step, a relational expression is obtained from the parameter registered in the iris database in conjunction with a registrant, and the pupil opening degree index obtained at the second step is assigned to the relational expression, whereby the feature data to be collated is obtained. (*Oda, Col. 3 Lines 8-12, "iris code stored in the database" and "identifies individuals by matching", where matching is done by comparing iris code. In order to retrieve information from a database a relational expression must be used.*)

Regarding **claim 15**, Oda discloses an iris registration device which performs data registration for iris authentication, comprising:

means for acquiring an iris image from a registrant; (*Oda, Fig. 2, #4 camera*)

means for obtaining feature data and a pupil opening degree index from the iris image; (*Oda, Fig. 2, #19 "Iris Image Processing Section"*) and

means for performing data registration for the registrant in an iris database using the feature data and the pupil opening degree index. (*Oda, Fig. 2 #8, the "Host"*)

Regarding **claim 16**, Oda discloses an iris authentication device which performs personal authentication using iris images, comprising:

means for acquiring an iris image from a person to be authenticated; (*Oda, Fig. 2, #4 camera*)

means for obtaining feature data and a pupil opening degree index from the iris image; (*Oda, Fig. 2, #19 "Iris Image Processing Section"*)

means for obtaining feature data to be collated by referring to data registered for a registrant in an iris database in which data registration has been done using pupil opening degree indices with the obtained pupil opening degree index; (*Oda, Fig. 2, #19 "Iris Image Processing Section"*) and

means for comparing the feature data to be collated with the feature data to determine whether or not the person to be authenticated is identical to the registrant. (*Oda, Fig. 2, #10, "Authorized Person Matching Section"*)

Regarding **claim 17**, Oda discloses a program for instructing a computer to execute personal authentication using iris images, comprising the steps of:

obtaining feature data and a pupil opening degree index from an iris image acquired from a person to be authenticated; (*Oda, Col. 4 Lines 11-13, the system verifies whether or not the photographed image of the eye exhibits biogenic responses, Where typical biogenic responses are defined in Col. 3 Lines 54-62. The "pupil opening index" references "the contraction of pupil diameter"*)

obtaining feature data to be collated by referring to data registered for a registrant in an iris database in which data registration has been done using pupil opening degree indices with the obtained pupil opening degree index; (*Oda, Col. 3*

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Lines 8-12, "identifies individuals by matching an iris code ...", where the iris code can be one of four codes based on lighting conditions (Col. 12 Lines 9-20)) and

comparing the feature data to be collated with the feature data to determine whether or not the person to be authenticated is identical to the registrant. (*Oda, Col. 3 Lines 8-12, "identifies individuals by matching an iris code ..."*)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Flom et al. (Patent #4,641,349), hereafter referred to as Flom.

Regarding **claim 6**, Oda discloses the personal authentication method of claim 5, But Oda does not specifically teach

"wherein when the authentication process is aborted, a preferable condition for capturing an iris image is estimated based on the pupil opening degree index obtained in the authentication process and a pupil opening degree index associated with registered feature data, (*Flom, Col. 11 Line 65- Col. 12 Line 10*) and

the person to be authenticated is advised to re-acquire an iris image under the estimated capturing condition. (*Flom, Col. 12 Lines 11-17*)"

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Oda with Flom for the purpose of getting the best possible image of the eye.

7. Claims 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida (Patent #6,424,746), hereafter referred to as Nishida.

Regarding **claim 9**, Oda discloses the personal authentication method of claim 1, wherein the registration process includes the steps of:

acquiring a plurality of iris images having different pupil opening degrees from the registrant; (*Oda, Col. 5 Lines 17- Col. 6 Line 43 discloses photographing multiple images based on various light sources. The light sources intensity controls the pupil diameter*)

But Oda does not specifically teach the concept of a transformation rule (*Nishida, Col 4, Line 53 to Col. 5 Line 16 does not disclose the use of iris images, but does discloses use of transformation rule applied to structural features which reads on the feature data.*) in

"specifying registration feature data from a plurality of pieces of feature data obtained from the plurality of acquired iris images and obtaining a transformation rule for transforming the registration feature data to another feature data having a different pupil opening degree index; (*See Nishida Lines above*) and

registering the registration feature data and the transformation rule in the iris database in conjunction with the registrant, (*See Nishida lines above*)

the authentication process includes the step of generating the feature data to be collated using the pupil opening degree index obtained in the authentication process based on feature data and a transformation rule registered in the iris database in conjunction with a registrant. *(See Nishida lines above)*

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Oda with Nishida for the purpose of fixing images deformed by noise.

Examiner notes that the creation of iris code in Oda is a transformation rule. But the transformation rule is not saved in the iris database in conjunction to the registrant. A simple encryption key can also read on the transformation rule.

Regarding **claim 14**, Oda discloses the personal authentication method of claim 11, wherein:

But Oda does not specifically teach the concept of a transformation rule
“the iris database stores feature data and a transformation rule for transforming the feature data to another feature data having a different pupil opening degree index for each registrant; *(Nishida, Col. 4 Line 53 to Col. 5 Line 16)* and

at the third step, the feature data to be collated is generated using the pupil opening degree index obtained at the second step based on the feature data and the transformation rule registered in the iris database in conjunction with a registrant. *(Nishida, Col. 4 Line 53 to Col. 5 Line 16)”*

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Oda with Nishida for the purpose of fixing images deformed by noise.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzaki (Patent #6,614,919), hereafter referred to as Suzaki.

Regarding **claim 10**, Oda discloses the personal authentication method of claim 1,

But Oda does not specifically teach

"wherein the pupil opening degree index is the ratio of a pupil diameter to an iris diameter in an iris image." (*Suzaki, Col. 8 Lines 15-25, "ratio of the radius r_p of the pupil circle and the radius r_i of the iris circle to the central angle A_p of the pupil is determined (ratio $IP=r_i/r_p$)"*)

It would have been obvious to one of ordinary skill in the art at the time of invention to modify Oda with Suzaki for the purpose of defining a pupil opening degree index.

Response to Arguments

9. Applicant's arguments filed June 23, 2008 have been fully considered but they are not persuasive.

Regarding Applicant's argument regarding the USC 112 rejection of claim 8, Examiner notes that ¶[0162] mentions that each parameter is thinned. Examiner is still unsure what exactly is "thinning. In the response on page 13, applicant states "which includes co-efficients extracted with intervals – a radial direction". In the above statement, what else is included? Does this thinning also contain the 2-D Gabor Filter?

How about the convolution or correlation? The paragraph also mentions also discusses an interpolation. What exactly is "thinning"?

Regarding applicant's argument that Oda (Col. 4 Lines 11-13) fails to teach or suggest "obtaining feature data and a pupil opening degree index from the iris image". Col. 4 Lines 5-13 discloses the life check code causes the simulation unit to operate and the subject's eye is photographed. The life check code causes the eye pupil diameter (opening degree index) to change based on the code, and is photographed. The system then checks the biogenic responses, which include "Contraction of pupil diameter" (Col. 3 Lines 54-62).

In response to applicant's argument on page 14 ¶12-5, that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "pupil opening index is a unique key, but for adapting light source environmental condition during the registration process ...") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

On page 15, Claims 6 and 10 are traversed, but examiner does not see any arguments regarding these specific limitations.

Regarding applicant's argument that Oda does not disclose "performing data registration for the registrant in an iris database using the obtained feature data and pupil opening degree index" Col. 4 Lines 14-24 "an image of an eye exhibiting biogenic

characteristics can be inputted based on the life check code", where the pupil opening degree index is one of the various biogenic responses.

Regarding applicant's argument that Oda does not disclose "obtaining feature data to be collated using the pupil opening degree index", the examiner does not see this limitation in the claims. Examiner assumes that Applicant is referring to "obtaining feature data to be collated by referring to data registered for a registrant in the iris database with the pupil opening degree index obtained in the authentication process;" in claim 1. Examiner contends that the matching the generated iris code and iris code stored in the database reads on the "obtaining feature data to be collated using the pupil opening degree index", where the system using various keys (biogenic responses, which includes contraction of pupil diameter).

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GANDHI THIRUGNANAM whose telephone number is (571)270-3261. The examiner can normally be reached on M-Th, 7:30am to 6pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gandhi Thirugnanam/
Examiner, Art Unit 2624
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Supervisory Patent Examiner, Art Unit 2624